

**Amendments to the Claims**

This listing of claims will replace all prior versions and listings of claims in the application:

**Listing of Claims**

Claims 1 – 110 (cancelled)

111. (Previously presented) A semiconductor structure comprising:  
a substrate including an insulator layer; and  
a device layer disposed over the insulator layer, the device layer comprising at least one of strained Si, strained  $\text{Si}_{1-w}\text{Ge}_w$ , strained Ge, GaAs, AlAs, ZnSe, and InGaP.
112. (Previously presented) The structure of claim 111 wherein a surface of the structure has a root mean square surface roughness of less than about 11 nanometers.
113. (Previously presented) The structure of claim 111, further comprising:  
a device integrated into at least a portion of the device layer.
114. (Previously presented) The semiconductor structure of claim 111, wherein the substrate comprises silicon.
115. (Previously presented) A semiconductor structure comprising:  
a substrate comprising silicon;  
an insulating layer disposed over the substrate; and  
a relaxed  $\text{Si}_{1-y}\text{Ge}_y$  layer disposed over and in contact with the insulating layer, wherein a Ge concentration  $y$  of the relaxed layer is selected from the range of greater than zero to 1.
116. (Canceled)

117. (Previously presented) The structure of claim 115 wherein the Ge concentration  $y$  has a value of 1.

118. (Previously presented) The structure of claim 115, further comprising:  
a device disposed within at least a portion of the relaxed  $\text{Si}_{1-y}\text{Ge}_y$  layer.

119. (New) The structure of claim 111, wherein the device layer comprises strained  $\text{Si}_{1-w}\text{Ge}_w$ .

120. (New) The structure of claim 111, wherein the device layer comprises strained Ge.

121. (New) The structure of claim 111, wherein the device layer comprises strained GaAs.

122. (New) The structure of claim 111, wherein the device layer comprises strained InGaP.